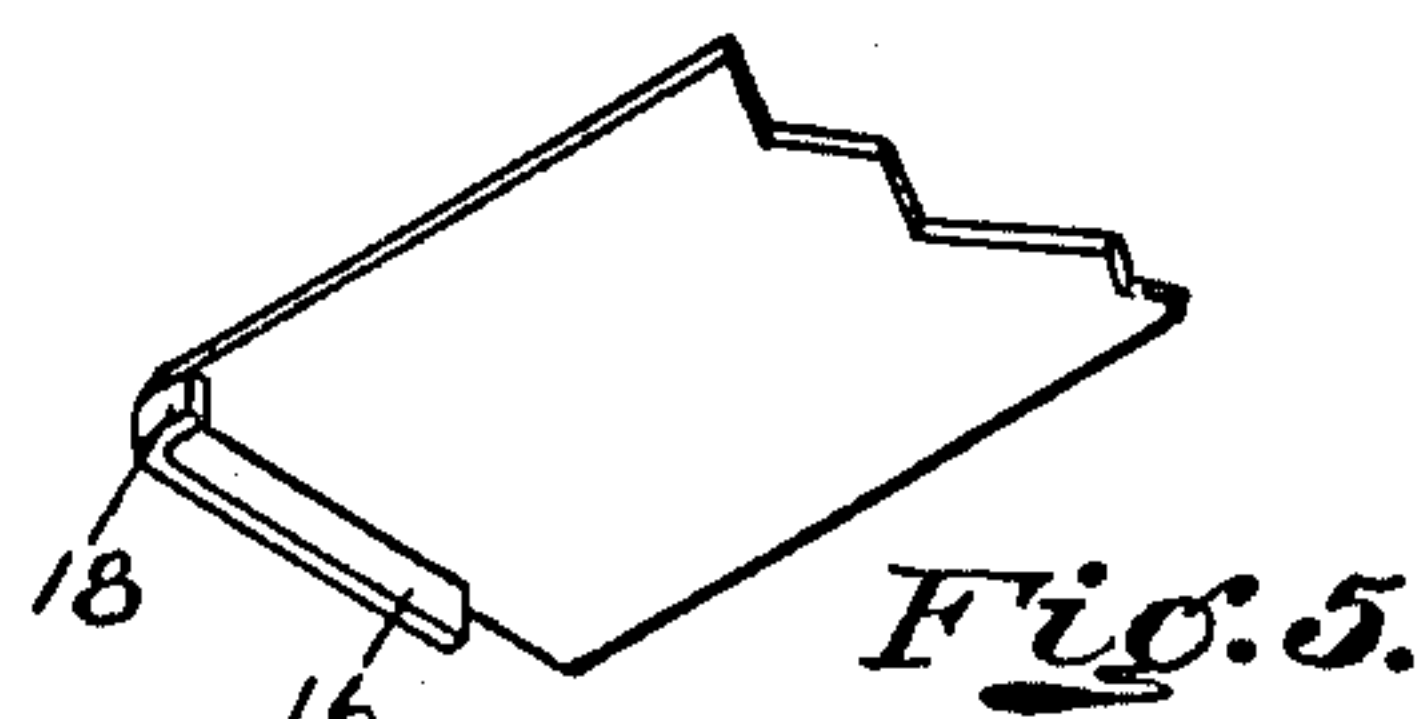
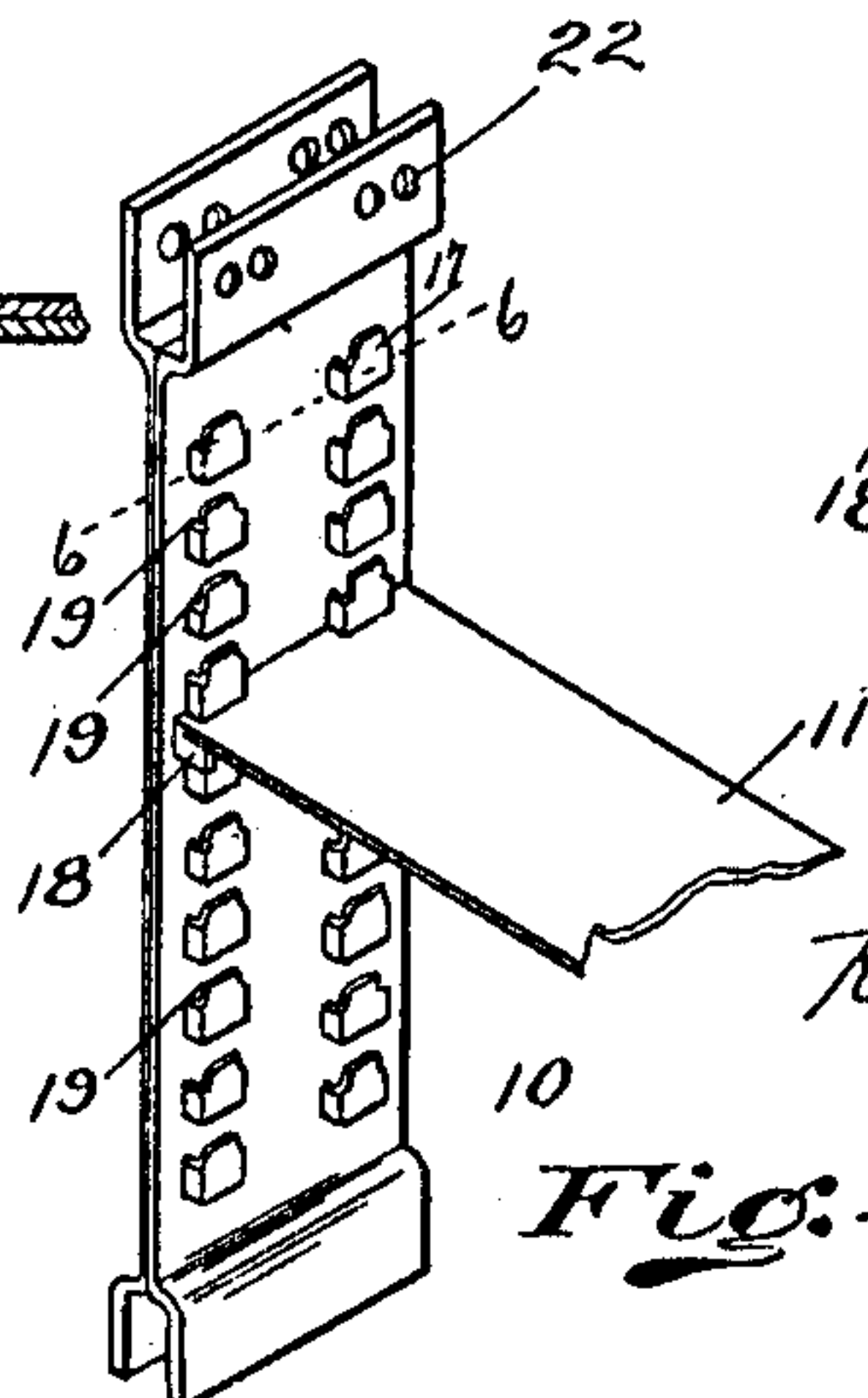
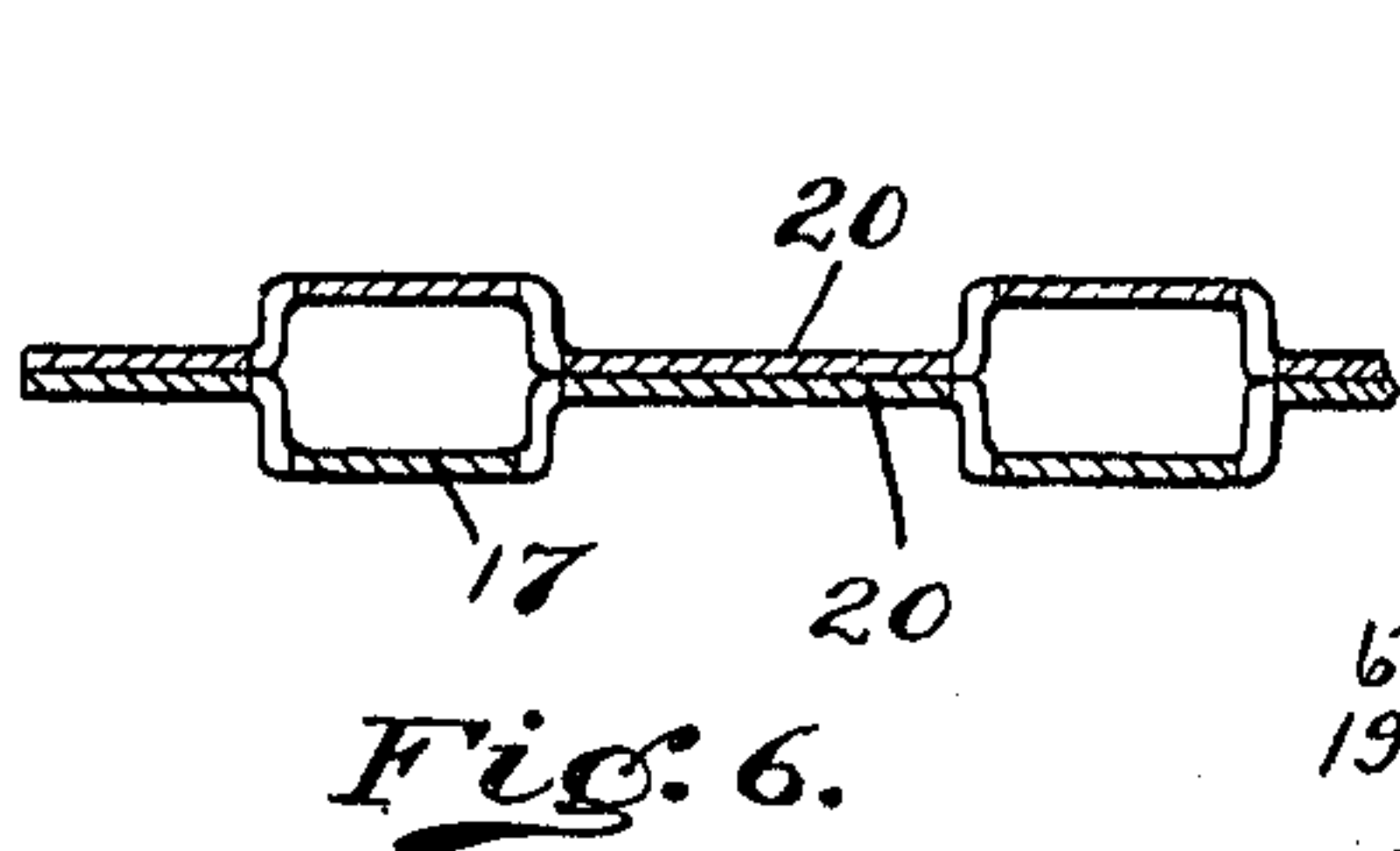
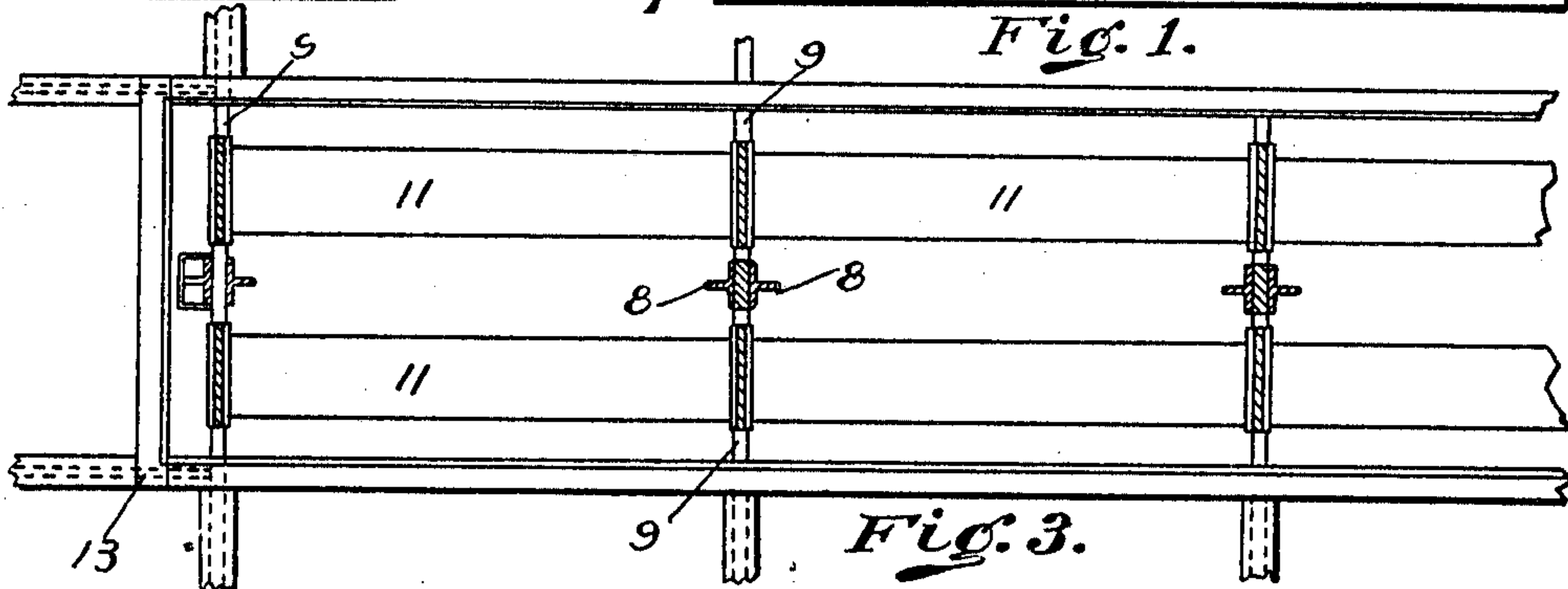
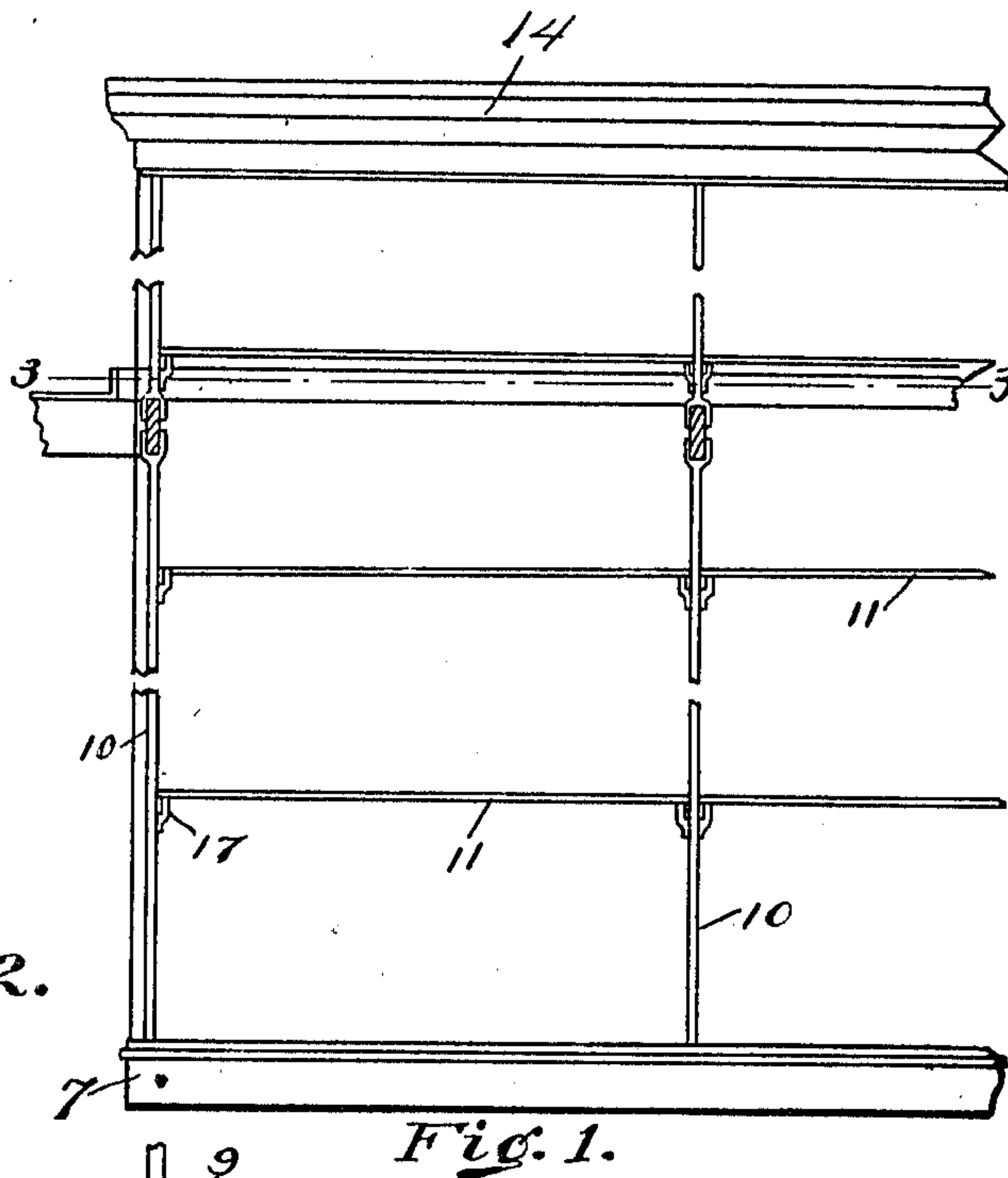
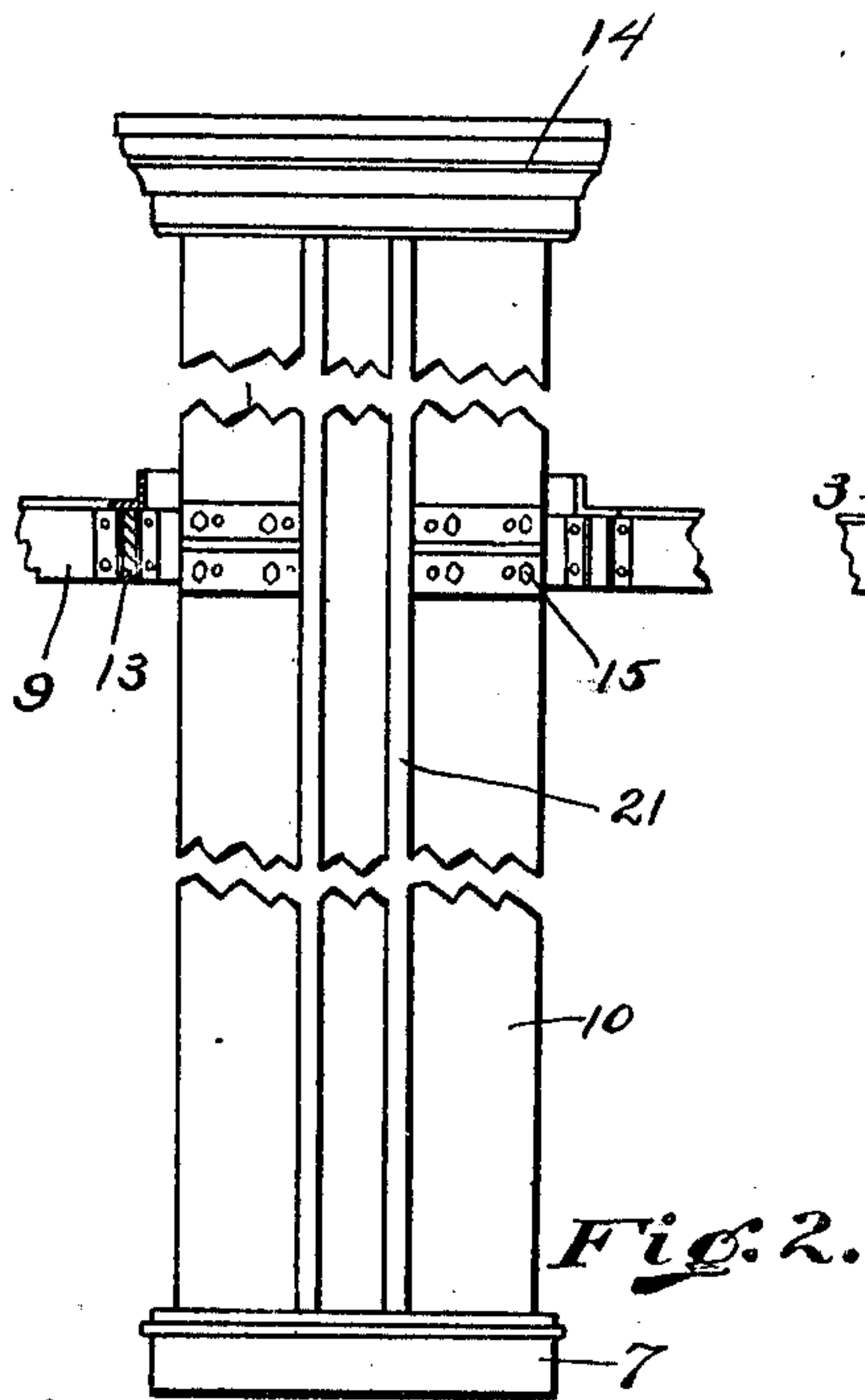


R. O. WHEELER.
BOOK STACK.
APPLICATION FILED MAR. 8, 1909.

969,822.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 1.



Witnesses
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Fig. 4. Walter Murray
Attorney

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2 SHEETS—SHEET 2.

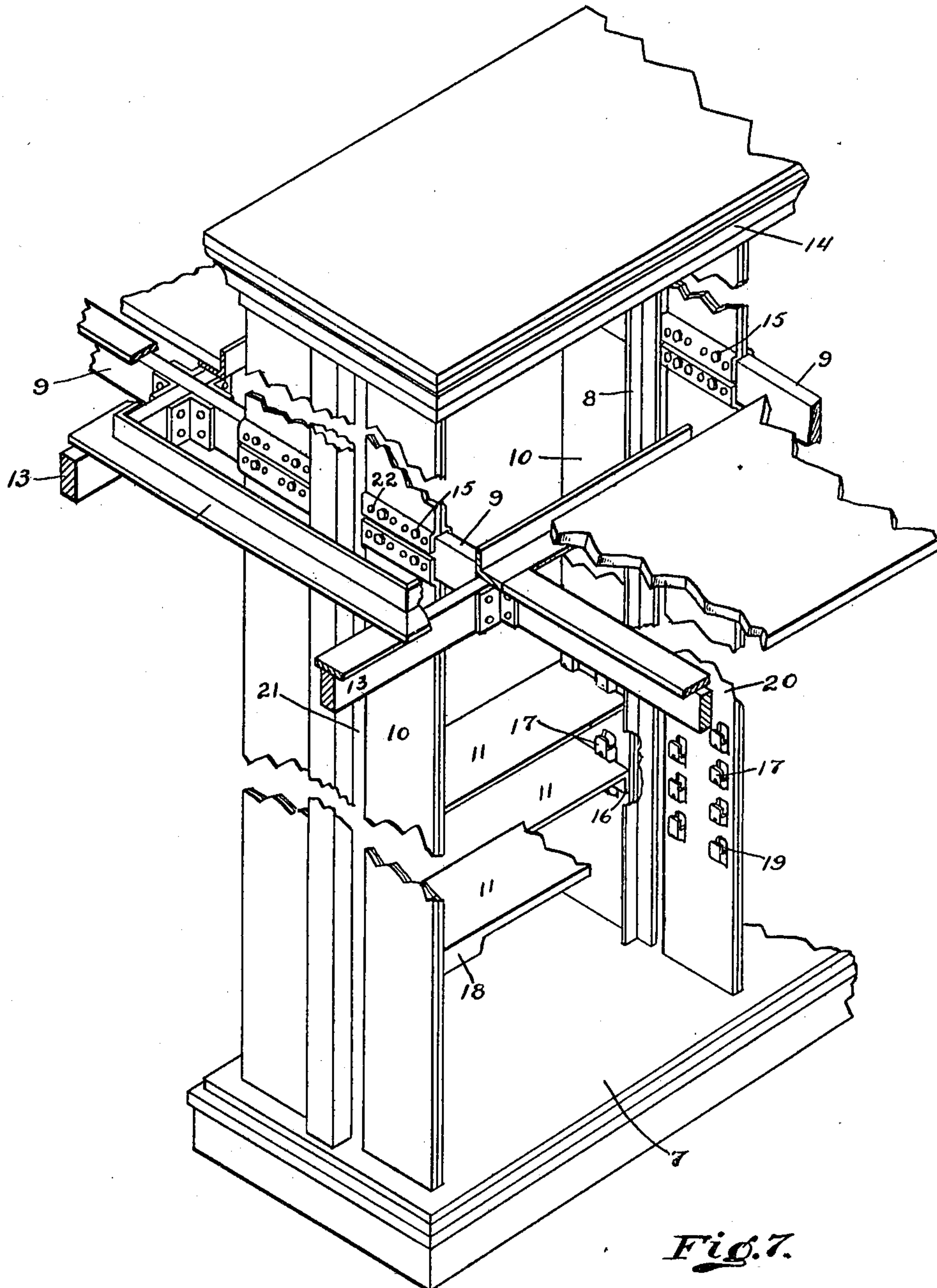


Fig. 7.

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UNITED STATES PATENT OFFICE.

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BOOK-STACK.

969,822.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed March 8, 1909. Serial No. 481,939.

To all whom it may concern:

Be it known that I, RAYMOND O. WHEELER, a citizen of the United States of America, and resident of Cincinnati, county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Book-Stacks, of which the following is a specification.

This invention relates to book stacks and more particularly to stacks composed entirely of metal, and has for an object the production of a stack of simple and economical construction.

A further object is the production of a stack in which means are employed for providing ventilation at the sides as well as at the front of the book shelves.

A further object is the production of a book stack in which means are employed for adjusting the shelves vertically and for removably mounting them in place on the stack.

A further object is the production of means for adjusting the shelves laterally to accommodate books of different width.

These and other objects I attain in a stack embodying the features herein described, and illustrated.

In the drawings accompanying this application, and forming a part thereof, Figure 1 is a side elevation of a stack embodying my invention, parts being shown broken out and the ends being brought together to economize space upon the drawings. Fig. 2 is an end view of the stack shown in Fig. 1. Fig. 3 is a sectional view taken along line 3—3 of Fig. 1. Fig. 4 is a perspective view of a shelf supporting member, shown in connection with a portion of a book shelf. Fig. 5 is a perspective view of a portion of a book shelf which forms a detail of my invention. And, Fig. 6 is a sectional view taken along line 6—6 of Fig. 4. Fig. 7 is a perspective view of a book stack, with parts thereof broken away, to expose parts lying in the rear.

The stack illustrated as embodying my invention as disclosed by this application and my co-pending application, serially numbered 481940, is composed entirely of metal and consists of a frame portion built

up of structural steel sections and supported on a suitable foundation. Shelf supporting members, book shelves and aisle supports are mounted on the frame portion, and the aisle supports are arranged so as to give convenient access to the shelves.

In the copending application serially numbered 481941, I have illustrated together with other details, the construction of a preferred form of shelf, adapted to be employed in connection with the book stack embodying my invention.

The stack consists of a longitudinal row of uprights, each of which is made of two T-arms, 8—8, placed back to back. The uprights are supported upon a base 7 and support at their upper ends an ornamental coping 14. Transverse beams 9 are supported by the uprights 8. The cross beams 9 support shelf supporting members 10, which support the shelves 11. With this arrangement, all the correspondingly located beams 9 of one stack are in the same plane, and cooperate in supporting aisle or floor supporting members 13. When two or more stacks are located side by side, the horizontal cross beams 9 are continuous, extending from one stack to the other, and are connected to correspondingly located uprights in all the stacks. The aisles or floors are then located between and are supported by the uprights of adjacent stacks, and provide access to each stack. The cross beams 9 are preferably connected to the structural frame or to the wall of the building in which the stack, or stacks, are located, for the purpose of making the construction rigid and for preventing vibrations. Besides supporting the aisles, the beams 9 support the shelf supporting members 10, which are secured to the frame portion of the stack at their ends only. Each member 10 is secured at one end to one beam 9, and at the other end to the beam next below. A shelf supporting element 10 is secured to each cross beam 9 on each side of each upright 8, and they extend one above the other, parallel to the uprights from the top to the bottom of the stack. The upper ends of the top series of the shelf supporting members 10 are connected to short cross beams, which

are provided in the top portion, or coping 14 and the lower ends are connected to the uppermost series of horizontal beams 9. Each member 10 is bifurcated at its ends 5 and is adapted to straddle the cross beams 9 and to be clamped in place by means of bolts 15, which extend through holes formed in the beams 9 and the bifurcated ends of the members. The lower end of one member 10 straddles the top of one beam 9 and is secured thereto, while the upper end of the member 10, next below, straddles the bottom of the same beam, and is swung therefrom.

15 The shelves 11 are located between adjacent shelf supporting members 10 and are removably secured thereto. Each shelf is formed entirely of metal and is provided at its ends with laterally extending flanges 16, which are formed by turning the metal of the shelf proper down, and at right angles to the shelf. These flanges are adapted to engage brackets 17, which are formed on the shelf supporting members 10. The 20 flanges 16, stiffen the shelf laterally, and are provided at their forward ends with stop lugs 18. Each stop lug is formed by severing the forward end of the flange 16 along the line of its intersection with the shelf proper and bending the metal so released, at right angles to the flange. The 30 brackets 17 are formed in two rows on each member 10, and the lug 18, by engaging the front bracket of the supporting pair, prevents the shelf from being moved too far in, and thereby holds it in its proper place. These lugs and brackets keep the shelves in alinement and add to the appearance of the stack.

40 Each bracket 17 is provided with a vertically extending tongue 19, which is adapted to engage the supporting flange 16 of the shelf and to lock the shelf against lateral motion relative to the supporting member 10. The brackets 17 are, moreover, so spaced along the supporting member, that the lower edges of one pair of brackets are adapted to lock the shelf in place and prevent it from being removed vertically when it is 50 mounted on the next lower pair of brackets. This arrangement makes it necessary to slide the shelves laterally in place.

The shelf supporting members 10, which are located at the ends of the stack, are provided with brackets 17 on one side only and are adapted to support the ends of one set of shelves. The members 10, which are located in intermediate positions in the stack, are provided on both sides with 60 brackets 17, and are adapted to support the ends of two adjacent sets of shelves. Each pair of shelf-supporting members may support as many book shelves as can be conveniently located between the adjacent se-

ries of beams 9, or between adjacent floors or 65 aisles. While the shelves, after they are in place, are held securely, they may easily be removed and adjusted vertically, by supporting them on one or another set of supporting lugs. Each member 10 is formed 70 of two separate pieces of sheet metal 20, which are flanged at their ends to form the bifurcated ends* of the members and which are riveted, or otherwise secured together. The flanges are pressed or formed on the 75 individual sheets 20 before they are secured together. The brackets 17 are pressed or stamped in the sheet metal forming the member 10, and, like the flanges, are stamped or pressed before the pieces are 80 secured together. The brackets illustrated in the drawing are formed by shearing the sheet metal along the top and bottom of the bracket and stamping it to the desired contour. The shearing and stamping opera- 85 tion may, of course, be performed simultaneously, and by the same dies. The shelf supporting members 10 are adjustable along their supporting beams, so that the shelves will accommodate books of different width. 90 This adjustment is accomplished by providing a number of bolt holes 22 in the bifurcated ends of the members, which are adapted to register with the bolt holes provided in the supporting beams. The shelf 95 supporting members are moved along the beam until the desired holes in the bifurcated ends register with the bolt holes in the beams, and they are then clamped in place, as described. 100

A ventilating space 21 is maintained at the ends of each series of shelves and between the uprights and the adjacent shelf supporting members. The uprights are of such width that they may be adjusted along 105 the supporting beams without destroying this ventilating space.

What I claim is:

1. In combination in a book stack, a book shelf provided with laterally extending supporting flanges and alining or stop lugs integrally formed with said flanges and shelf supporting members provided with brackets adapted to engage said flanges and said lugs and to hold said book shelves in place. 115

2. A metal book shelf provided with supporting flanges, and an alining or stop lug formed integrally with and turned at right angles to each flange.

3. A metal book shelf turned down at its 120 ends to form supporting flanges, and an alining or stop lug formed integrally with and extending at right angles to each flange.

4. As an article of manufacture a shelf supporting member consisting of two metal 125 strips located back to back and permanently secured together and provided on each side with shelf supporting brackets formed in-

tegrally with the respective metal strips, and a beam engaging flange provided at each end of both of said members.

5 5. As an article of manufacture a shelf supporting member consisting of two metal strips located back to back and permanently secured together and provided on each side

with shelf supporting brackets, and a beam engaging flange provided at each end of both of said members.

RAYMOND O. WHEELER.

Witnesses:

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E. M. McCallister.